

## INHERITANCE OF FLOWER COLOUR AND MORPHOLOGY IN ORNAMENTAL SUNFLOWER

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Sunflower *Helianthus annuus* L. is a species which includes a lot of ornamental forms with great variations of floral colour and morphology. These characters are qualitative, controlled by major genes. Knowledge about inheritance of these characters and obtaining new combinations should give larger genetic variations and more safety in breeding ornamental sunflowers.

It aimed to find the way of inheritance of the floral colour and morphology we crossed four inbred lines with lemon, yellow, orange and red ray flowers and a "chrysanthemum" flowered sunflower in which the disk flowers are entirely ligulate. F<sub>1</sub> and F<sub>2</sub> generations were grown together with their parents at the experimental field of Institute of Field and Vegetable Crops, at Rimski Šančevi in 1973. The experiment was conducted in a randomised block design in three replications. Average number of plants per each cross combination was 100 plants of parents and F<sub>1</sub> hybrids and 500 plants of F<sub>2</sub> generations. Obtained results of observed to the expected number of plants in the segregating populations for the various characters were tested by chi-square method.

From crosses of the red-flowered sunflower line with the yellow, orange and lemon lines all the F<sub>1</sub> plants showed a "gaillardia" pattern in which a bend of red pigment occurred near the centre of the ray flower petals, where as the peripheral parts of the petals were the same colour as that of the nonred parent. Segregation in the F<sub>2</sub> populations of red x lemon indicated that red was dominant to lemon, involving a single dominant gene for red. The F<sub>2</sub> of the cross yellow x red and orange x red approximated a 9:7 ratio, suggesting that two independent complementary dominant genes control red colour. From the results of all crosses involving the red parent, it is suggested that two genes are required for expression of red colour, but the one gene is present in lemon line. A two-gene hypothesis for red flower colour supports results of Fick (1976). The ray flower colour of F<sub>1</sub> plants from crosses involving lemon and yellow lines, indicates that yellow is dominant to lemon. Segregation in the F<sub>2</sub> population of yellow x lemon approximated ratio a 3 yellow : 1 lemon, which supports results of Škaloud and Kovačik (1974). Conversely, Fick (1976), suggested that two genes control inheritance of yellow and lemon colour. Crosses of the "chrysanthemum" type of sunflower in which the disk flowers are entirely ligulate, showed that this character is dominant in the F<sub>1</sub> generation. Obtained ratio of segregation in F<sub>2</sub> population corresponds to theoretical ratio of 3 "chrysanthemum" : 1 normal. This supports results of Luczkiewicz (1976), that a single dominant gene was involved, while Fick (1976) suggested that a minimum of two genes controlled the "chrysanthemum" type. Obtained differences in results due to different genotypes used in crosses and also to individual observations of colours without using special colour-cards.